MEC136:ENGINEERING GRAPHICS AND CAD

L:2 T:2 P:0 Credits:4

Course Outcomes: Through this course students should be able to

CO1 :: recognize the fundamentals of engineering drawing and AutoCAD tool.

CO2 :: understand the conceptual framework of orthographic projections with an acquaintance of 2D AutoCAD commands.

CO3 :: understand the drawing of orthographic projections and 2D sketches on AutoCAD.

CO4 :: practice the technique to draw the sectional views on drawing sheet and AutoCAD.

CO5 :: build isometric views on drawing sheet and 3D models on AutoCAD.

CO6 :: develop surfaces of various objects and create 3D models on AutoCAD.

Unit I

Introduction to Engineering Drawing : Conceptual framework of drawing instruments, line types, dimensioning, single stroke vertical gothic letter writing, scales-plain and diagonal, introduction to AutoCAD interface- units, limits, navigation, OSNAP, ortho, UCS, F-keys

Unit II

Projection of Points and Lines : Introduction, concept of traces, AutoCAD commands- line, circle, arc, polyline, and dimensioning style, hands-on-practice on AutoCAD, principles of quadrants and orthographic projections, orthographic projection of points and lines (parallel, perpendicular and inclined to one plane), rectangle, polygon, ellipse

Unit III

Orthographic Projections : Introduction, principle, orthographic projections in both first and third angle projections systems, practice, AutoCAD commands- linetype and its properties, move, rotate, trim, copy, erase, mirror, scale, fillet, chamfer, array, hands-on-practice on 2D drawings

Unit IV

Sectional Views : Introduction, principle, sectional views (full, half, and offset) in first and third angle projection systems, practice, AutoCAD commands- stretch, explode, offset, extend, join, region, break, hatch, hatch-edit, hands-on-practice on 2D drawings

Unit V

Isometric Views : Introduction, terminology, isometric scale, isometric views of prisms, pyramids, and one object on other, dimensioning, AutoCAD commands for 3D- 3P UCS rotation, standard shapes, extrude, revolve, presspull, hands-on-practice on 3D drawings

Unit VI

Development of Surfaces : Introduction, development methods, surface development of regular and truncated prisms and pyramids, AutoCAD commands for 3D- subtract, union, orbit, and visual styles, hands-on-practice on 3D drawings

Text Books:

1. ENGINEERING DRAWING WITH AN INTRODUCTION TO AUTOCAD by DHANANJAY JOLHE, MC GRAW HILL

References:

1. ENGINEERING DRAWING by N.D. BHAT & M. PANCHAL, CHAROTAR PUBLISHING HOUSE PVT. LTD.

2. ENGINEERING GRAPHICS by K C JOHN, PRENTICE HALL

3. ENGINEERING DRAWING by M.B. SHAH & B.C. RANA, PEARSON